Standard S24.805
December 10, 1974
(Revised 01/24/1999)

SPARE PARTS

1.0 SCOPE

1.1 Purpose. This document establishes a standard to be observed by Contractors in the preparation of adequate spare parts lists and the provision of those spare parts for the maintenance of electronic, electrical, and electro-mechanical equipment or systems.

1.2 Application. The requirements of this Standard shall apply to equipment or systems developed or manufactured to Government specifications.

1.3 Contracting Officer's Technical Representative. The Contracting Officer's Technical Representative (COTR) shall provide the final interpretation of any conflict between this standard and specific contract requirements.

1.4 Waivers. Any request for waiver of specific requirements of this standard shall be submitted in writing to the COTR and to the Contract Administrator. A request for waiver must include: a) identification of the paragraphs for which the waiver is requested; b) identification of the systems, equipment, or components for which the waiver is requested; and c) a discussion of rationale for granting the waiver, including impact on reliability, maintainability, schedule, and cost if the waiver is not granted.

2.0 APPLICABLE DOCUMENTS

NOAA/NESDIS Standard No. S24.801
"Preparation of Operation & Maintenance Manuals"

NOAA standards are available from: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, OSD/3, Washington, D.C. 20233.

MIL-HDBK-217
"Reliability Stress Analysis for Electronic Equipment"

Military specifications and standards are available from: Commanding Officer, U.S. Naval Supply Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

3.0 REQUIREMENTS

3.1 Spares level. This standard defines a level of spares sufficient to maintain equipment operation over a period of one year (24-hour/day, 7-days/week) without interruption longer than the time to repair. The mean time to repair shall be considered as 30 minutes, with a maximum time of 90 minutes.

3.2 Replaceable parts list. The Contractor shall prepare a consolidated list, or lists, of replaceable parts. This list, or lists, shall be included in Section VI of the operation and maintenance manual as described in NOAA/NESDIS Standard No. S24.801. A replaceable part is defined as the smallest component, sub-assembly, or assembly, practicable to replace.

3.2.1 Included items. The following items shall be included in the list of replaceable parts.

(a) All circuit cards, modules, and subassemblies, as well as the components mounted on or within them.

(b) All electrical and electronic circuit components; for example, resistors, capacitors, inductors, electron tubes, semi-conductors, integrated circuits, transformers, circuit breakers, motors, etc. Custom circuit boards, modules, and subassemblies shall be listed as well as all components mounted on or within them. Commerical circuit boards, modules, and subassemblies shall be listed as well as components mounted on or within them as documented in the vendor literature.

(c) All parts closely associated with electrical or electronic components; for example, tube sockets, connectors, terminal boards, insulators, knobs, fuses, switches, and lamp holders. All connectors to which a intra- or inter-system cable attaches shall be specifically and uniquely identified.

(d) All mechanical parts subject to wear, breakage, deterioration, or contamination in normal usage; for example, gears, shafts, bearings, seals, gaskets, air or oil filters, chassis slides, etc.

(e) For predominately or essentially mechanical devices, such as antenna arrays, steerable antenna pedestals, and rotating machinery; all mechanical assemblies shall be completely broken down and all parts individually listed.

(f) Bulk materials needed and to be stored on station which are of a special type, critical dimension, or other special characteristic.

Diagrams indicating component locations shall be included, keyed to the spare parts list, for all electrical/electronic circuit boards, modules, and subassemblies. Similar diagrams shall be included for all

mechanical assemblies and subassemblies.

3.2.2 Non-included items. The following items shall not be included in the lists of replaceable parts:

(a) Items or material normally supplied in bulk quantity; for example, wire, coaxial cable, tubing, twine, etc., except those items described in (f) above.

(b) Structural parts such as brackets, cabinets, drawers, etc.

3.2.3 Format. The replaceable parts list shall be prepared in tabular form as in Figure 1. The list shall consist of ten columns. Each page shall carry equipment name, and date of the list and its latest revision. Pages shall be numbered consecutively.

3.2.3.1 Column 1 - Item Number. A four-digit number shall be assigned to each item for reference purposes. This number shall be assigned so the list is in ascending numerical order.

3.2.3.2 Column 2 - Description. For each item the nomenclature, noun first, shall be listed. The description shall include values, ratings, and tolerances, as applicable. The list shall be in alphabetical order.

3.2.3.3 Column 3 - National Stock Number. If the item possesses a National Stock Number (formerly Federal Stock Number) it shall be listed here. JAN or MIL part numbers are acceptable alternates, if they exist.

3.2.3.4 Column 4 - Contractor Part Number. The part number assigned by the Contractor shall be listed in this column.

3.2.3.5 Column 5 - True Manufacturer's Part Number. For commercial items, the part number assigned by the original manufacturer shall be listed. If a part has been modified, the number assigned by the modifier shall be used.

3.2.3.6 Column 6 - Federal Manufacturer's Code. The code number of the manufacturer whose part number is listed in Column 5 shall appear here. A complete listing of all manufacturers whose codes are used, shall be appended to the parts list in alphabetical order, with their addresses and telephone numbers.

3.2.3.7 Column 7 - Quantity Used. This column shall indicate the total quantity of each part used in the equipment or subsystem, by site or location.

3.2.3.8 Column 8 - Repair Code. The Contractor shall determine the repair code for each item of the list and indicate it here. Codes to be used are:

(1) Item not repairable, replacement required.

(2) Item repairable on site.

Date _____

(EQUIPMENT NOMENCLATURE)

1	2	3	4	5	6	7	8	9	10
ITEM	DESCRIPTION	NATIONAL STOCK NUMBER	CONTRACTOR PART NUMBER	TRUE MFRs PART NUMBER	FED MFRs CODE	QTY. USED	REPAIR CODE	QTY. RECOM.	UNIT COST

FIGURE 1

(3) Item too complex for site repair and must be returned to manufacturer.

Code (3) items shall specify the expected turn-around time for factory repair.

3.2.3.9 Column 9 - Quantity Recommended. This column shall indicate the minimum spares quantity of each item to be kept at each site to assure the required reliability of the equipment. Sites shall be individually identified in Columns 9a, 9b, 9c, etc., as required, with Column 9 T representing the total spare requirement.

Note: Quantity recommended is a per site requirement. Systems located at multiple sites may increase the total spares requirement.

3.2.3.10 Column 10 - Unit Cost. This column shall show the unit cost of the recommended spares including all loadings if procured from the contractor supplying the list. The unit cost provided is intended to allow an estimated cost of replacement. It is not intended to represent a fixed price quote.

3.3 Deliverable spare parts list. The items to be provided as spares shall be selected from the replaceable parts list. Criteria for selection shall be based on a reliability estimate, taking into account both quantity of an item and prediction of its failure rate. The replaceable parts list and the list of the deliverable spares selected shall be submitted to the COTR for approval.

3.3.1 Minimum spares. Neglecting failure rates, a minimum number of spares shall be provided. This minimum quantity (rounded, not truncated) shall be based on the following:

(a) Ten percent plus one each of every type of removable subassembly, circuit card, and module for both custom designed and off-the-shelf standard equipment.

(b) Ten percent plus one each of every type of relay, switch, circuit breaker, and indicator for custom designed equipment.

(c) Ten percent plus one each of every unique component (transistor, diode, electron tube, integrated circuit, etc.) for custom designed equipment. This requirement may be satisfied by providing an appropriate number of assembled removable subassemblies, circuit cards, or modules in lieu of piece-part components.

(d) Ten percent plus one each of every unique item or assembly, not covered above, which may be expected to fail for both custom designed and off-the-shelf standard equipment.

(e) One each for each failure prone device (i.e., 100 percent spares), specifically including power supplies for both custom designed and off-the-shelf standard equipment.

(f) Minimum maintenance kits for each commercial item incorporated into systems.

(g) Two each of all circuit board extenders, test fixtures, and/or special cable assemblies required for alignment, maintenance, and repair.

Ten percent plus one sparing results in the following ratios of spares to in-system items: 1:1-4, 2:5-14, 3:15-24, etc.

3.3.2 Failure rates. The minimum spares list shall be modified by failure rate predictions for the parts used. Failure rates for prediction shall be identified by source (i.e., MIL-HDBK-217, GIDEP Reports, failure rate experience, etc.). A detailed mean time between failure (MTBF) prediction (failures/item/1000 hours), for each type of replaceable part used in the equipment, shall be furnished when the parts supplied list is submitted for COTR approval.

3.4 Standard or commercial equipment. Standard or commercial (off-the-shelf) equipment, delivered with a system which becomes an integral part thereof need not have its replaceable parts included in the replaceable parts list. However, maintenance kits, including at least one each of every removable subassembly, circuit card, and module for these items shall be supplied on the same basis as for the rest of the system.

Special maintenance aids and tools, as listed in 3.3.1(g) and 3.6 shall be supplied on the same basis as for the rest of the system.

3.5 Subcontract items. Subcontracted items incorporated into a system shall be treated as follows:

1) If the system loses its identity in a larger assembly, its parts shall be integrated into the replaceable parts list.

2) If the item retains its identity, it shall have a separate list conforming to the requirements of this standard. In either case, spares shall be provided as specified herein.

3.6 Special tools. The need for special tools for adjustment and maintenance of the equipment shall be minimized. Special tools are defined as those items not listed in the Federal Supply Catalog or available from multiple domestic sources.

If special hand tools and power tools are required for maintenance, repair, calibration, adjustment, or operation of the equipment or system, they shall be listed in a separate appendix to the replaceable parts list. This list shall contain description of the tool, true manufacturer's part number, federal manufacturer's code, and quantity required.

If special tools are required, one set shall be provided, per site, with the spare parts, and their listing shall

be appended to the spare parts list.

3.7 Items to be supplied. The Contractor shall supply one set of spare parts and special tools for each site where the equipment is installed, in quantities applicable to the site as described in 3.3.1.

3.8 Printing. Printing requirements for the parts lists shall conform to the requirements of NOAA/NESDIS Standard No. S24.801 in all respects.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Inspection and test. Spare parts supplied under the requirements of this standard shall be the same quality as original parts. They shall be inspected and tested to the same specifications as parts delivered in the equipment.

4.2 Interchangeability. All spare parts shall be duplicates (electrical and mechanical) of the originals, within manufacturing tolerances normally accepted for the unit, to assure compatibility.

5.0 PREPARATION FOR DELIVERY

5.1 Packaging of Spare parts. Each part shall be suitably packaged in paper or plastic envelopes, cardboard containers, or other inexpensive containers (except for items requiring wooden cases or other special packaging for proper protection).

5.2 Identification. Each spare parts package shall be properly marked as to its contents. Labeling shall consist of description and part numbers sufficient to identify the contents.

5.3 Packing for shipping. Each set of spare parts shall be packed in substantial commercial containers of the type, size, and material commonly used for such items. Each shipment shall contain a packing list of the spares included.